

HIV Infogram

April 2003 - HIV/AIDS Program

Update on Nonoxynol-9

Nonoxynol-9 (N-9) is a detergent that was designed as a contraceptive—to kill sperm and prevent pregnancy. In the United States, N-9 is available in a variety of concentrations and formulations, including gels, creams, foams, suppositories, and film. Some of these products are meant to be used by themselves and others are meant to be used with a diaphragm or cervical cap. In addition, N-9 is used in some vaginal and rectal lubricants and in the lubricant on some male

Birth Control

Products containing N-9 used according to the manufacturer's directions can be an effective contraceptive for people who do not need protection multiple times each day.

latex condoms. In laboratory and animal studies, N-9 has been shown to destroy bacteria and viruses that cause STDs, including herpes, gonorrhea, chlamydia, and HIV. Many people have believed that N-9 could help protect against infections such as HIV as well as unwanted pregnancy. However, recent clinical studies (of humans in real life settings) have shown that N-9 can actually increase the risk of HIV infection especially if it is used frequently (e.g., in studies involving female prostitutes) or rectally. We don't know everything about N-9, but we can clearly say:

1. **Nonoxynol-9 containing products should not be used rectally.** To do so could increase your risk of getting HIV or other STDs.
2. Nonoxynol-9 provides no protection against STDs or HIV and should not be used for disease prevention.
3. Water-based lubricants without N-9 should be used with condoms to help reduce the risk of breakage.
4. Nevertheless, using a condom (even if it contains N-9 lubricant) is much safer than unprotected sex.

Nonoxynol-9 containing products should not be used rectally. To do so could increase your risk of getting HIV or other STDs.

N-9 is considerably more toxic at smaller doses when used in the rectum compared to the vagina. Even the smaller doses found in sexual lubricants can cause damage to the lining of the rectum. But frequent exposure to N-9 vaginally can damage membranes also. When membranes are damaged they become more susceptible to infection by HIV and other sexually transmitted diseases.

Two recent studies looked at the effects of N-9 on the rectum. Subjects inserted N-9 containing products into the rectum and then 15 minutes later, gently inserted water into the rectum and collected the water sample that drained out. The water (lavage) specimen was then examined under a microscope. The examination showed that large sheets of the epithelium (lining of the rectum) was removed (exfoliated) by the N-9. The researchers concluded that the rectal use of products containing N-9 “causes a rapid exfoliation of extensive areas of the rectal epithelium.... It is reasonable to assume that the loss of the protective epithelium would render a person more at risk for infection by HIV and other sexually transmitted pathogens.”^{1,2}

Nonoxynol-9 provides no protection against STDs or HIV and should not be used for disease prevention.

N-9 products were designed and approved by the FDA as contraceptives. Several recent studies show that Nonoxynol-9 does not provide protection from STDs.^{3,4} One study compared the infection rates of women who used condoms alone versus women who used condoms and nonoxynol-9, and found that the women who used N-9 had higher rates of several STDs.⁵

Additionally, N-9 may actually increase HIV transmission. At the XIIIth International AIDS Conference, results from a large study showed a higher rate of new HIV infections among women using the N-9 gel than among placebo users (no microbicide use group). There was a 15 percent HIV incidence rate in the N-9 group, compared to 10 percent in the placebo group. Researchers assume that N-9 increased the risk of transmission by irritating the vaginal lining, causing microscopic sores that give the virus increased access to the body.⁶

Water-based lubricants without N-9 should be used with condoms to help reduce the risk of breakage.

External lubrication of latex condoms (with water-based lubricants only) has also been shown to decrease the breakage rate without significantly increasing the slippage rate.^{7, 8}

Oil-based lubricants (vaseline, hand lotion...) should not be used with latex condoms. They weaken the latex and are associated with condom breakage.⁹

Nevertheless, using a condom (even if it contains N-9 lubricant) is much safer than unprotected sex.

The consensus of all scientists reviewing the research on condoms is that: “Latex condoms, when used consistently and correctly, are highly effective in preventing transmission of HIV, the virus that causes AIDS. In addition, correct and consistent use of latex condoms can reduce the risk of other sexually transmitted diseases (STDs), including discharge and genital ulcer diseases.”¹⁰

Condoms containing lubricants with N-9 are thought to pose little risk of tissue damage due to the low amounts of lubricant on the condom, unless they are used several times a day. One recent study compared infection rates of sex workers who used condoms with N-9 containing lubricant and those that used condoms with a plain lubricant and found no significant difference in infection rates.¹¹

For more information please call Public Health's HIV/STD Hotline at (206) 205-7837.

¹ Phillips DM, Taylor CL, Zacharopoulos VR, Maguire RA. Nonoxynol-9 causes rapid exfoliation of sheets of rectal epithelium. *Contraception*. 2000 Sep;62(3):149-54.

² Phillips, D et al. (2002) Effect of N-9 on the human rectal mucosa. [Abstract A-066]. Microbicides 2002 Conference, Antwerp Belgium, May12-15, 2002.

³ Roddy RE, Zekeng L, Ryan KA, Tamoufe U, Weir SS, Wong EL. A controlled trial of nonoxynol 9 film to reduce male-to-female transmission of sexually transmitted diseases. *N Engl J Med*. 1998 Aug 20;339(8):504-10.

⁴ Van Damme L, Ramjee G, Alary M, Vuylsteke B, Chandeying V, Rees H, Sirivongrangson P, Mukenge-Tshibaka L, Ettiegne-Traore V, Uaheowitchai C, Karim SS, Masse B, Perriens J, Laga M; COL-1492 study group. Effectiveness of COL-1492, a nonoxynol-9 vaginal gel, on HIV-1 transmission in female sex workers: a randomised controlled trial. *Lancet*. 2002 Sep 28;360(9338):971-7.

⁵ Roddy RE, Zekeng L, Ryan KA, Tamoufe U, Tweedy KG. Effect of nonoxynol-9 gel on urogenital gonorrhea and chlamydial infection: a randomized controlled trial. *JAMA*. 2002 Mar 6;287(9):1117-22.

⁶ van Damme L. Advances in topical microbicides. Presented at the XIII International AIDS Conference, July 9-14, 2000, Durban, South Africa.

⁷ Gabbay M and Gibbs A. Does Additional Lubrication Reduce Condom Failure? *Contraception* 1996;53; 155-58.

⁸ Steiner M, Piedrahita C, Glover L, Joanis C, Spruyt A, Foldes R. The impact of lubricants on latex condoms during vaginal intercourse. *Int J STD AIDS*. 1994 Jan-Feb;5(1):29-36.

⁹ Voeller B, Coulson AH, Bernstein GS, Nakamura RM. Mineral oil lubricants cause rapid deterioration of latex condoms. *Contraception*. 1989 Jan;39(1):95-102.

¹⁰ Fact Sheet for Public Health Personnel: Male Latex Condoms and Sexually Transmitted Diseases. Department of Health and Human Services. Centers for Disease Control & Prevent, National Center for HIV, STD and TB Prevention, Divisions of HIV/AIDS Prevention. December 2, 2002. Accessed online at: <http://www.cdc.gov/hiv/pubs/facts/condoms.htm> on December 11, 2002

¹¹ Roddy RE, Cordero M, Ryan KA, Figueroa J. A randomized controlled trial comparing nonoxynol-9 lubricated condoms with silicone lubricated condoms for prophylaxis. *Sex Transm Infect*. 1998 Apr;74(2):116-9.

This information is available in alternate formats. Please call us at (206) 296-4649 or by email: hivstd.info@metrokc.gov